Evaluation Report
for

University of Nebraska
Medical Center

SEPA - BREAKING BARRIERS

Results of Summative Survey of Teachers and Administrators

BSCS Evaluation Report (ER 2000-10 November)

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November 23, 2009

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Executive Summary

Teachers and administrators were surveyed about their involvement and the greater impact of the UNMC SEPA project *Breaking Barriers* on teachers, students and school communities. Seventy-three percent of teachers responding to the survey reported have some contact with the project, and about 30% reported attending a summer teacher workshop at UNMC. Fourteen teachers had a one-on-one visit from a project staff member.

From 2006 to 2009, teachers' perception of student ability in reading and math decreased while teachers' perception of student ability in science increased, The Science Teacher Efficacy Beliefs Inventory (STEBI) (Riggs and Enochs, 1990) was used to measure teachers' self reported beliefs about their efficacy in and expected student outcomes from teaching science. Amount of contact with the UNMC SEPA project did not significantly correlate with teacher STEBI scores. Only two items on the STEBI instrument correlated with amount of contact with the UNMC SEPA project (quality of science teaching compared to other topics and whether or not quality teaching can overcome student factors). Factor analysis of the two STEBI constructs (efficacy and expected student outcomes) produced evidence that the teachers in the schools serviced by the UNMC SEPA project are unsure of the impact of their teaching on the student population.

Teachers indicated that their expectations of the project have mostly been met. They described the need for greater professional development opportunities around physical science topics. Teachers still see a need for standards-based curriculum materials, supplies and equipment to facilitate meaningful, inquiry-based classroom experiences for students.

On average, teachers are spending 115 minutes a week teaching science topics in the classroom. This number decreases for grades K-2 (97 minutes) and increases for grades 3-5 (128 minutes) and grades 6-8 (148 minutes). This means that students are being exposed to about 2 hours of science per week. There is evidence that the scientific materials and resources that the UNMC SEPA project has provided to schools are being used and shared.

Overall, teachers and administrators agree that the project has been an effective way to engage teachers in professional development experiences around science.
Teachers indicated that the greatest need for future professional development in science was integration of standards-based, content focused professional development experiences that focuses on helping teachers provide meaningful scientific experiences to students through exploration. Administrators indicated that they would like to see more professional development within individual schools, impacting a higher percentage of teachers.

About 50% of the teachers are currently using the science safety and career role model posters in the classroom. Teachers and administrators indicated that the posters are mostly used as wall displays and not integrated into the curriculum. Only 10% of teachers reported collaboration with school councilors around the role model posters. Development of a curriculum unit detailing health and science careers using the poster sets should be a next step in the development of this interesting and powerful project resource.

The project is in a unique place to take their relationships with the schools to a higher level through the implementation of long-term, content and pedagogy based professional development with

teachers. The involvement of students in the summer camps has opened a door for engaging students in a way that piques their interest in science and health education and careers, and assists the project in developing a meaningful relationship with the greater community.

Introduction

The SEPA project at UNMC has engaged with students, teachers and administrators from reservation schools in Nebraska and South Dakota over the past four years. Much of the work has been focused on developing relationships with teachers that encourage them to teach science with a higher degree of confidence and help them to introduce students to health and science careers. During the January, 2009 visits to school sites, many of the comments from teachers and administrators focused on increasing teacher confidence and providing schools with various materials (teaching materials as well as equipment).

In the spring of 2009, teachers in each of the participant schools took part in a “summative survey.” The intent of the survey was to get take a snapshot of the schools and to compare results with the “needs assessment” survey that was done in 2006 (BSCS, 2006). In addition, we were interested in finding out if there were differences on key outcomes between teachers who have actively participated in the project and those teachers who have been less involved with the project.

Teachers and administrators were asked to respond to items about their level of participation in the project, their assessment of student ability, expectations of the project (and whether the project has met expectations, and use of project specific resources.

The Science Teachers Efficacy Beliefs Inventory (STEBI) was chosen to measure teacher beliefs about teaching science. The STEBI measures two dimensions of teacher efficacy; teachers’ personal science teaching efficacy beliefs (PSTEB) and science teaching outcome expectancy (STOE) or efficacy regarding the impact of science teaching on student learning.

Teacher Summative Survey Results

Ninety-three teachers and 12 administrators responded to the 2009 survey of UNMC SEPA participants.

Between the 2006 needs assessment and the 2009 summative survey, 5 schools stopped actively participating in the project. Most of the schools were in Todd County. In addition, Liberty Elementary in Omaha has had limited participation in the project over the past 2 years. Table 1 shows the teacher responses from each of the schools compared with response levels on the needs assessment survey. Table 2 shows the grades that teachers responding to the survey teach.

Table 1. Responses by School

School	Number of Teachers Needs Assessment	Number of Teachers Summative Assessment
Liberty Elementary, Omaha, NE	31	0
Todd County South, Mission, SD	7	0
Todd County North, Mission, SD	12	0
Todd County Middle, Mission, SD	7	0
Rosebud Elementary, Rosebud, SD	16	0
Marty Indian School, Marty, SD	13	4
Santee Community School, Niobrara, NE	9	13
Tiospa Zina School, Agency Village, SD	7	5
St. Francis Indian School, St. Francis, SD	15	9
Walthill Elementary, Walthill, NE	11	9
Winnebago Public School, Winnebago, NE	14	30
Umo^{n}ho^{n} Nation Public School, Macy, NE	19	15
Total	161	93

Table 2. Number of Teachers by Grade

Grade	Number of Teachers Needs Assessment	Number of Teachers Summative Assessment
Kindergarten	26	16
1st Grade	27	16
2nd Grade	24	16
3rd Grade	22	16
4th Grade	25	16
5th Grade	26	16
6th Grade	25	14
7th Grade	20	12
8th Grade	19	15
9th Grade	1	2

Teacher Contact with SEPA Project

Seventy-three percent or 68 teachers reported having had at least one experience with the SEPA project. Twenty-seven percent or 25 teachers reported not having any contact with the SEPA project. Thirty teachers reported attending a teacher workshop, with 2 teachers attending 2 workshops and 3 teachers attending 3 workshops.

Fifty-six of the teachers reported having had attended an in-service day at their school and 14 teachers had a one-on-one visit with a project staff member. Two teachers attended a student camp and 3 teachers participated in an advisory board meeting. Five teachers commented that they had "other" contact with the SEPA project. Four of the responses indicated "die cutting" (which was offered as an in-service day) and one teacher attended DNA day events.

Teacher Perceptions of Student Ability.

Teachers were asked to rate the reading, math, and science level of their students. Figures 1, 3, and 5 illustrate the ratings for teachers in each "grade group" (Group 1 = K-2, Group 2 = 3-5, Group 3 = 6-8) from the needs assessment, conducted in 2006 (adjusted to include only the schools that participated in the summative assessment). Figures 2, 4, and 6, show the results of the same assessment 3 years later, in Spring of 2009. For teachers in the Kindergarten through 2nd grade group (Group 1), perception of student achievement in science decreased in the "at grade level" (73.1% to 69.7) and "below grade level" (25.4% to 27.3%) categories, and slightly increased in the "above grade level" category (1.5% to 3%) for science. Teachers in the 3rd to 5th grade group (Group 2) showed the largest change from the needs assessment to the summative study with an increase of 20% shifting from the "below grade level" to "at grade level" categories. Grade group 3 (6-8 grade) showed a positive increase in perception of student ability in science of about 10 percent from the "below" to "at grade level" categories from the needs assessment to the summative study. While this is an interesting "trend" only Group 2 showed statistically significant differences between their rating of student ability in science from the needs assessment to the summative study ($t = .31(48)$, $p<.05$, Effect size $d = .42$ [-.02 - .86]).

When considered as a group (all teachers), teachers perceive student reading, math and science abilities to be at or below grade level. From 2006 to 2009 the number of teachers perceiving students as performing below grade level in reading increased from 40.7% to 53.3%. For mathematics the percentage perceiving students as performing below grade level increased from 37.9% to 50.5%. Perception of science ability was the only category that decreased for the below grade level rating from 38.6% to 33.3%. This indicates that teachers were less likely to feel that students were better able to perform at a higher level in reading and math, but felt that students could perform at higher level in science.

Interestingly, when a correlation was performed between the amount of time that teachers had contact with the SEPA project and their rating of student ability in science, there was a non-significant, negative correlation ($r = -.042$).

Figure 1. Needs Assessment Group 1, perception of student abilities

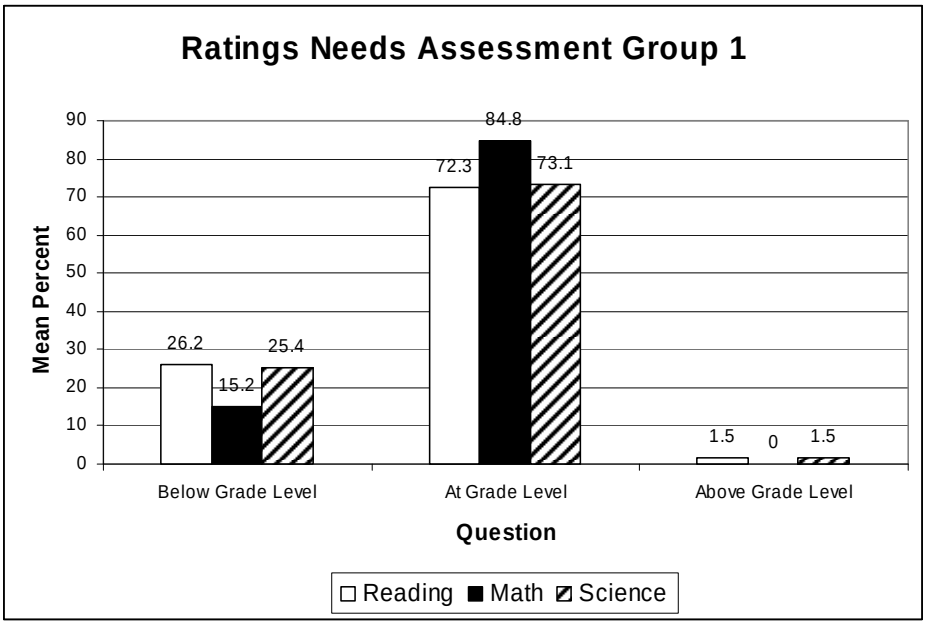


Figure 2. Summative Survey Group 1, perception of student abilities

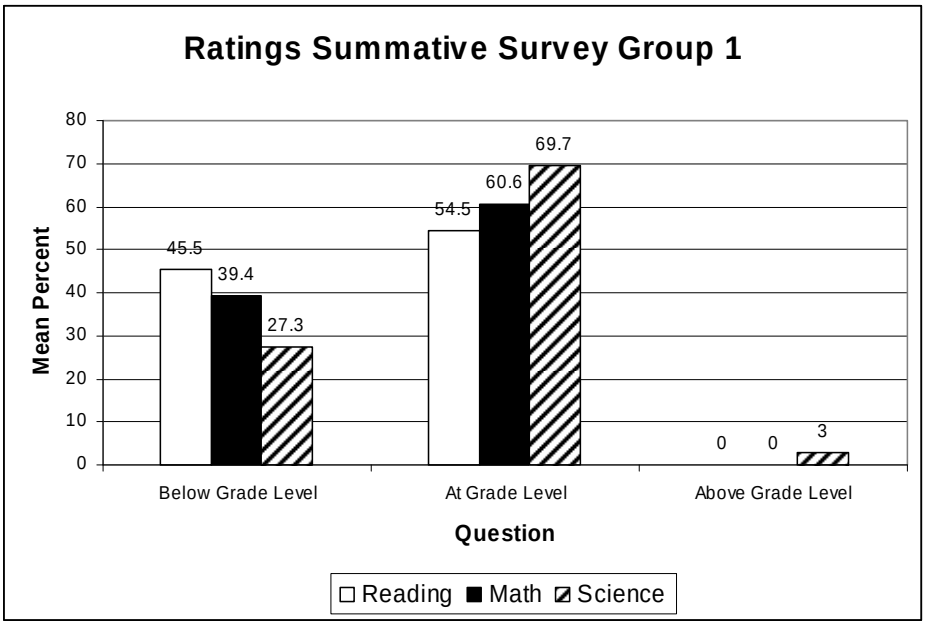


Figure 3. Needs Assessment Group 2, perception of student abilities

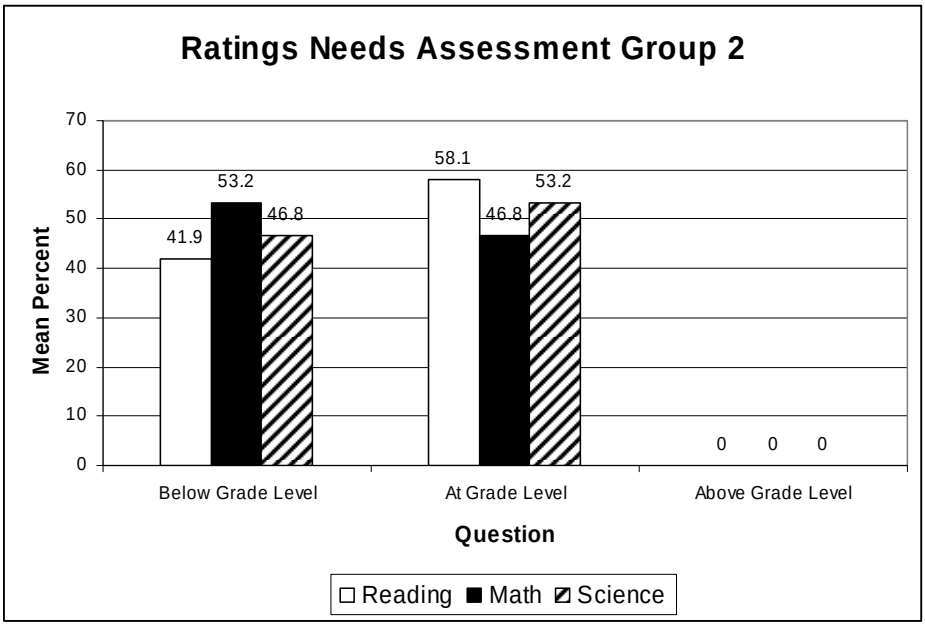


Figure 4. Summative Survey Group 2, perception of student abilities

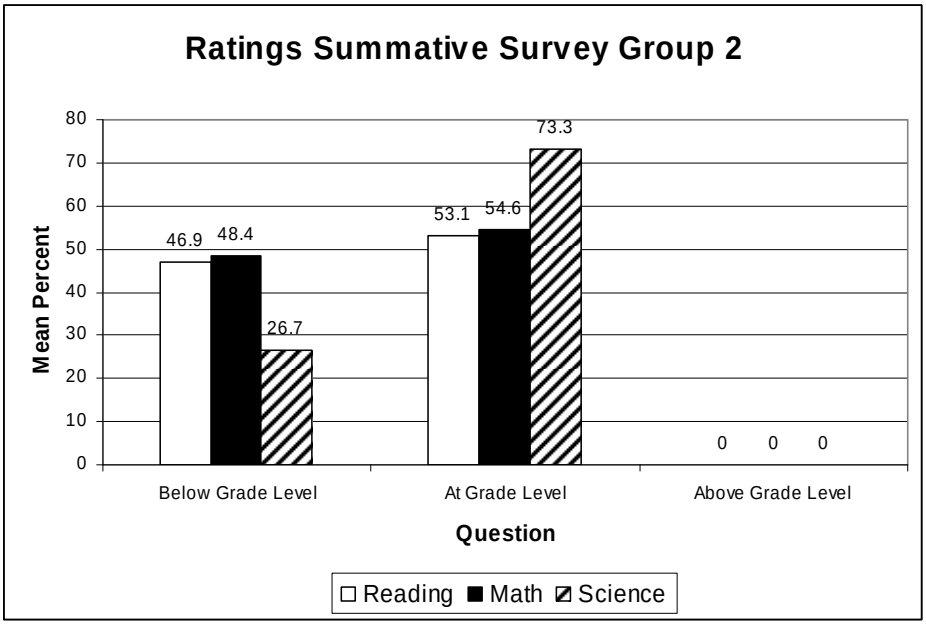


Figure 5. Needs Assessment Group 3, perception of student abilities

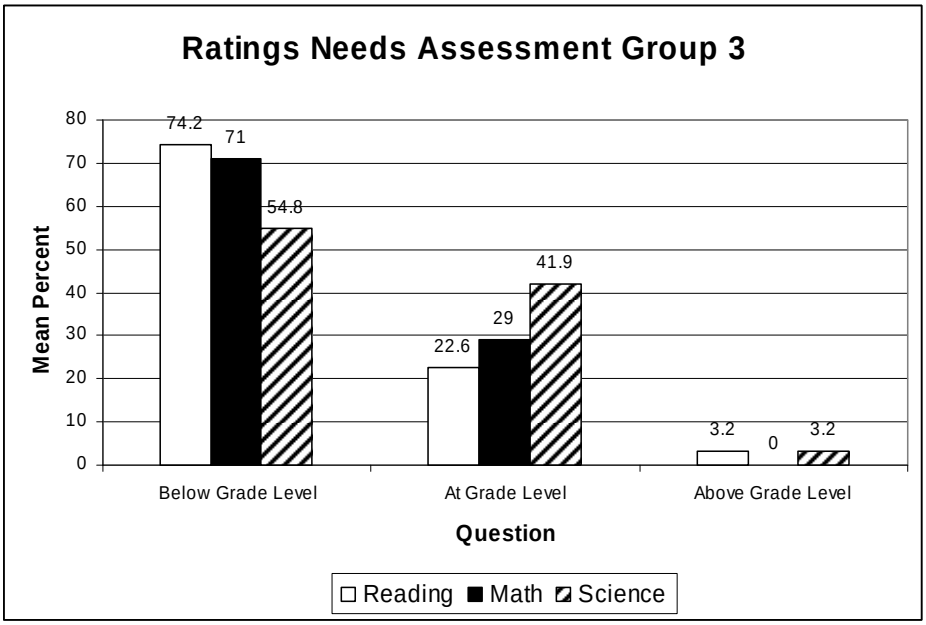
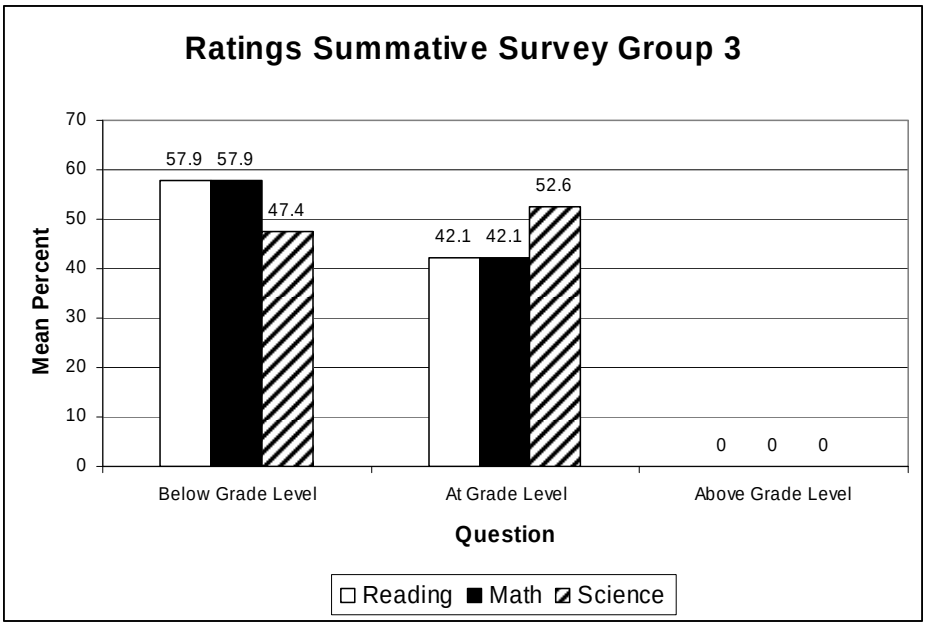


Figure 6: Summative Survey Group 3, perception of student abilities



Teacher Self-Efficacy

Teachers completed Riggs and Enoch's (1990) Science Teacher Efficacy Beliefs Inventory (STEBI) as part of the summative assessment. The ratings on the instrument range from "Strongly Disagree" to "Strongly Agree." The goal of administering the instrument to all teachers was to see if there was a correlation between higher teacher self-efficacy and participation in the SEPA project. There are two dimensions of the STEBI – the PSTEB (Personal Science Teaching Efficacy Belief Scale) and the STOE (Science Teaching Outcome Expectancy). There was a very small, non-significant correlation ($r = .09$) between the amount of project contact and the PSTEB. There was a small, negative, and non-significant correlation ($r = -.04$) between the amount of project contact and the STOE.

A similar, trend was observed when the amount of time spent at workshops was correlated with the two dimensions. Workshop attendance was weakly correlated ($r = .06$) with the PSTEB. There was a stronger (compared to the whole group), negative, but non-significant correlation ($r = -.15$) between workshop attendance and the STOE dimension.

Two items from the STEBI, one from the PSTEB and one from the STOE were significantly correlated with overall project contact. The first item (#25) states "Even teachers with good science teaching abilities cannot help some kids learn science." This item was significantly correlated with both overall project contact ($r = .31$, $p<.01$) and workshop attendance ($r = .25$, $p<.05$). Agreement with this statement is somewhat troubling. It may be an area that teachers need support and professional development. In particular, it would be helpful to expand the focus of the project to really dig into teachers' understandings of how people learn (Bransford, et al., 2000) and how students learn science (Donovan, et al., 2005) Without the belief that all students can learn science, how can we possibly expect teachers to be effective with all students?

The second item (#3) states "Even when I try hard, I don't teach science as well as I do most subjects." This item is within the PSTEB scale and indicates that the teachers that have participated in the workshop less likely to agree with this item ($r = .21$, $p<.05$). This item indicates that with effort, teachers who have had contact with the project believe they are as effective teaching science as they are other subjects.

Scores on the PSTEB and STOE were also correlated with the amount of time teachers spend teaching science. While neither of the correlations were significant, the amount of time that a teacher teaches science and the PSTEB scale was approaching significance ($r = .21$, $p = .059$).

When a factor analysis was run on the data from the teacher survey, the PSTEB loaded on one factor, indicating consistent ratings among the respondents. However, the STOE, the outcome expectancy measure loaded on 5 different factors indicating confusion and an inability to decipher items among the respondent. Not only does this indicate that the STOE portion of the STEBI instrument is not reliable for this population of teachers, it also indicates that the teachers are unsure about outcome expectancies – particularly in the area of student learning. Coupled with the result showing that project contact and responses to item 25, we would highly recommend that teacher participants be exposed to professional learning experiences that emphasize the capacity within all students to learn and do well in science (Resnick, et.al., 1997; NRC, 1997; AAAS, 1993)

Table 3. The table shows all of the items on the STEBI and the frequency of responses in each category. Green responses represent the STOE items and yellow, PSTEB.

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1. When a student does better than usual in science, it is often because the teacher exerted a little extra effort	1.1	5.5	19.8	64.8	8.8
2. I am continually finding better ways to teach science.		3.3	16.7	66.7	13.3
3. Even when I try very hard, I don't teach science as well as I do most subjects.	6.6	35.2	27.5	26.4	4.4
4. When the science grades of students improve, it is most often due to their teacher having found a more effective teaching approach.		5.4	18.5	67.4	8.7
5. I know the steps necessary to teach science concepts effectively.		9.0	33.7	51.7	5.6
6. I am not very effective in monitoring science experiments.	5.7	54.5	25.0	13.6	1.1
7. If students are underachieving in science, it is most likely due to ineffective science teaching.	2.2	30.3	37.1	27.0	3.4
8. I generally teach science ineffectively.	8.9	63.3	18.9	8.9	
9. The inadequacy of a student's science background can be overcome by good teaching.		14.6	23.6	53.9	7.9
10. The low science achievement of some students cannot generally be blamed on their teachers		20.0	35.6	41.1	3.3
11. When a low achieving child progresses in science, it is usually due to extra attention given by the teacher.	1.1	9.0	28.1	58.4	3.4
12. I understand science concepts well enough to be effective in teaching elementary science.		7.8	10.0	66.7	15.6
13. Increased effort in science teaching produces little change in some students' science achievement.	4.4	52.2	18.9	23.3	1.1
14. The teacher is generally responsible for the achievement of students in science.		12.2	34.4	50.0	3.3
15. Students' achievement in science is directly related to their teacher's effectiveness in science teaching.		15.6	31.1	47.8	5.6
16. If parents comment that their child is showing more interest in science at school, it is probably due to the performance of the child's teacher.		10.0	38.9	47.8	3.3
17. I find it difficult to explain to students why science experiments work.	5.6	56.7	20.0	16.7	1.1
18. I am typically able to answer students' science questions.		5.6	16.7	71.1	6.7
19. I wonder if I have the necessary skills to teach science.	9.0	51.7	19.1	18.0	2.2
20. Effectiveness in science teaching has little influence on the achievement of students with low motivation.	3.3	58.9	27.8	10.0	
21. Given a choice, I would not invite the principal to evaluate my science teaching.	13.3	54.4	14.4	12.2	5.6
22. When a student has difficulty understanding a science concept, I am usually at a loss as to how to help the student understand it better.		7.7	62.6	19.8	9.9
23. When Teaching science, I usually welcome student questions.		2.2	5.6	64.0	28.1
24. I don't know what to do to turn students on to science.	1.1	5.5	24.2	62.6	6.6
25. Even teachers with good science teaching abilities cannot help some kids learn science.	4.4	36.7	25.6	30.0	3.3

Teacher Expectations

A series of free response items on the survey dealt with teachers expectations surrounding the SEPA project. First, teachers were asked what where their expectations of the project. Then they were asked if the project met their expectations.

The two most common expectations cited were: 1) (more, better, effective, etc.) instructional strategies/techniques for teaching science; and 2) curriculum, lessons, activities, resources, and materials. These expectations greatly outnumbered all other expectations cited. While the majority of respondents describing these expectations felt that expectations were met by project activities, it is an interesting finding that the number of respondents citing the expectation increased from the Needs Assessment to the 2009 Survey, while the total number of survey respondents decreased by nearly ½. Clearly, effective pedagogy and curricular materials supporting effective pedagogy are of great importance to these teachers.

When asked what areas of science instruction they struggle with, teachers' indicated physical science (especially physics) most often on both the 2006 Needs Assessment and the 2009 Summative Assessment. It is not surprising then, that teachers cited physical science (especially physics) topics as the area that students are most likely to struggle with, as well, on both instruments. A large number of respondents cited needing help doing experiments or lab-based activities and having appropriate curriculum, materials, and equipment for such work on both the Needs Assessment and the 2009 Summative Assessment. Subsequently, teachers cited scientific method, inquiry, and student experiments as the second greatest need of students on both instruments. A large number of teachers cited they need help in "all areas of science" in the Needs Assessment, while far fewer cited the same in the 2009 Summative Assessment.

Responses to Question 39: What are the areas of science instruction that you struggle with?

rainforest layers
scientific method
Fitting it into the day!
Curriculum
All of it
Having the necessary equipment for experimentation.
1. Experiments because of the need for materials. 2. Order of delivery because we don't have books.
Electricity, Motors
Again, I don't teach science but I believe more hands on and experiments would help.
Not one certain area, just improve in all.
n/a - haven't taught science, never have. Probably - physics/chemistry
Physical Science
Comprehension
explaining how things work
Finding the time to teach science.
Finding time to teach science the way it should be taught and to provide hands on experiences.
Assessing whether students truly understand or merely parroting information.

I don't: I have concentration in science.
NA
All areas/I have a hard time motivating myself.
need more hands on things
the time that we had to plan this.
*Genetics
I just introduce students to concepts in general.
electricity, energy, light, sound
Force, Mass
I am not a science teacher but I do use NF books in reading that have to do with science.
Deeper level thinking on science experiments.
things I am not interested in.
I'm looking for more ways to work with magnets. The overhead projector is slowly leaving our schools. I'm wondering if there are activities we could show on our smart boards?
I enjoy teaching science.
earth science, using metric measurements
finding the time to do activities
Having hands-on projects & materials.
electricity, physical sciences

genotypes, homo & heterozygous, genetic codes, chemistry, some of the math in physics.
Experiments
biology, chemistry, physical
Health
Chemistry
At my current grade level & even when I taught at the 5/6th grade levels I knew the content but making it not so boring was a struggle, now it's not so much any more. Teaching Inquiry @ 3rd grade was a challenge.
Physical science
Having things to teacher (materials)
Finding materials needed for a lesson.
Having materials to teach it
N/A - teach Kindergarten
helping my students understand how to make a hypothesis
Explaining things in a way Kindergarten students can understand. Not enough time devoted each day.
Really none.
having supplies & lab activities, a good science curriculum
Physics
doesn't rate in K.
Not having materials to do some experiments.
relating science experiments to each other.
not much in kindergarten
Time, space, and supplies
Biology
Chemistry, Physics
Atoms
I struggle with taking all of the information and picking out which part the students are struggling with. I need to break it down more instead of cramming all that info. in.
all areas
I only teach earth science & I'm ok there, but if students have questions in other areas I struggle.
Science is one field I would love to teach because it can be such an interactive field.
Simple Machine Instruction
Physical Science (somewhat)
Chemistry
Sun, moon, stars - Space
Rocks - minerals & weather
none
Chemistry
Finding interesting activities to go with every lesson and information that the students need to know.
Lack of Equipment. Space.
Assessments that are non-traditional. How to evaluate without homework.
Earth rotation & moon phases - going from concept to visual understanding
Getting my students interested and getting them to understand that science is a process.
Finding time throughout the week to teach science.
food pyramid - which is the right one to use? How many servings?
Physical Science
Physical science - levers, simple machines.
Experiments
connecting experiments to chapters in books (fast & easy & with hardly any cost).

Responses to Question 40: What areas of science do your students struggle with?

None
scientific Method
SITTing & reading text.
understanding how things work.
in the area of elements and chemistry.
Physical Science, but I feel the main reason for their struggles is that this area of science introduces new concepts that are also difficult for my students to relate to. My students are 2nd graders on an Indian Reservation.
vocabulary, concepts.
Gravity
same as previous question
physical sciences
Comprehension
understanding the concept enough to apply it to other areas.
They tend to struggle with body parts. (heart, brain)
Providing more hands on activities
Understanding how to use prior knowledge to make predictions.
n/a
NA
all areas
Visualizing
First time concepts.
Estimation and 2 more and 2 less.
electricity
They seem to struggle with Force & Motion, Electricity
Test taking, DNA
none
The human body.

The scientific method & doing the experiments. We have been focusing more on that this year.
earth metric/standard measuring
understanding some of vocabulary
Relating what we've done in class to questions on the Standardized test.
physical sciences
The same area I struggle: but we work together to find a solution or call the science teacher. We will also ask another student who may understand & better explain the answer or procedure. Some of my students struggle with reading & vocabulary so any science is a struggle.
Vocabulary
all
health, what food pyramid do we use?
Following experiments exactly. Differentiating between a Sci. experience & a Sci. experiment.
all areas
It depends on the day, the student & the happenings in their lives…but all of them lack life experiences from which to build on.
physical science
Concepts
Following step by step instructions.
Transfering to every day.
basic concepts and vocab. They have no previous knowledge
N/A -teach Kindergarten
making a hypothesis.
Prior knowledge to build upon.
Applying the scientific method on their own projects.
All - there are no science resources to use at school.
materials/lab activities
Teach K.
Life Science
really understanding what I am teaching because we don't have materials for some experiments.

tabulation, math in science
not much in kindergarten
They enjoy and respond well to science activities.
reading of materials and research.
Reasoning abilities
atoms
I think mainly they struggle with all of the terminology.
all areas
physical
Abstract science.
Simple Machines
Physical Science, but I feel the main reason for their struggles is that this area of science introduces <u>new</u> concepts that are also difficult for my students to relate to. My students are 2nd graders on an Indian Reservation.
upper levels
Scientific vocabulary & explaining why "it" works.
none
Depends on the student
Most of my students struggle with memorizing parts of things especially the body.
Lack of Equipment/Facility
reading, vocabulary
Applying what is learned from written material. Abstract to actual world. Retaining & reporting outcomes of experiments.
Scientific Method, Reading the text.
At my level, students seem to understand most concepts.
health
physical science - measurements
Weights Volume Transfer
wording on state tests

Teacher Use of Curriculum Materials

Question 41 asked teachers: Are you currently using a science series to teach science?
YES = 59.2
NO = 40.8

Of the teachers who are using a science series, according to Table 4, 21 of them report using Scott Forseman, 10 Houghton Mifflin and 6 FOSS. It would be helpful if the teachers that do use a science curriculum received professional development that linked back to the curriculum materials.

Table 4. Curriculum Materials in Use.

yes, we have a series but it has been put on the back burner to do low reading & math scores.
scholastic - FOSS - Hands on nature activities.
McGraw-Hill
wish we were
glencoe
I'm not currently teaching science. I taught science 3 years ago in 4th grade.
Scott Forseman
Houghton Mifflin
Houghton Mifflin
Scott Foresman, Discover the Wonder, 1996
Foss kits
Scott Forseman
Glencoe & some Foss kits
The Scott Foresman series
I use Prentice Hall's Science Explorer series (the 16 text series) as a backbone along with internet resources & other outside materials.
Scott Foresman series & some things from the internet.
Houghton Mifflin
Houghton Mifflin
I use the classroom text or internet. Biology, The Web of Life, SF. Strauss Lisowski AW
Scott-Foresman Science, Steck-Vaughn Science by the Grade
I have no science books to use.
Scott Forseman
Scott Forseman with a lot of SEPA things added to it.
Scott Foresman
yes, Houghton Mifflin Science

a combination of Scott Foresman & FOSS kits
Houghton Mifflin
We have one but I seldom use it. Our reading series success for all has science included - and that is what I use.
Glencoe science McGraw Hill
I want to teach FOSS
yes, Houghton Mifflin
Foss kits
Scott Forseman
Have Discover the Wonder/Scott Foresman. Use some of it. Must use other sources to meet State Standards.
Houghton Mifflin Science
macmillan/mcGraw-Hill
Houghton Mifflin
Scott Foresman
Scott Foresman Science
Scott Foresman
sometimes, when it matches the standards. Scott Foresman - Diamond Edition.
Houghton Mifflin Science, Living things in their environment.
FOSS with some Scott Forsman
7-9 use Prentice-hall
Glencoe McGraw Hill Science. Teaching science in first semester only.
Scott Foresman
Scott Forseman
Scott Foresman Science
Scott Foresman

Time Spent Teaching Science

Question 42 asked teachers how much of their time, per week, is spent teaching science or health career exploration? The responses ranged from 0-480 minutes per week. The mean of the entire group was 115 minutes per week. Clearly, the teachers have been encouraged to spend much of their time in the classroom teaching math and reading – this is not a surprise based on what we have heard from teachers over the course of the project.

Table 5. Amount of Time Spent Teaching Science

Group	Minutes per week
Grade Group 1 (K-2)	97.21
Grade Group 2 (3-5)	128.23
Grade Group 3 (6-8)	147.78

Question 43 asked teachers: What materials or resources have you used or do you plan to use in your classroom that were provided by the SEPA project either directly or indirectly?
From the responses it is clear that various scientific tools and resources are being used in the schools, along with die cuts and foldables. Grade group 1 teachers mentioned die cuts and foldables most often. Grade group 2 teachers were more likely to mention materials that might be used in a scientific investigation. The Grade group 3 teachers were the most likely to mention the role model posters.

Grade Group	Materials
1	Die-cuts, posters
1	don't know (this is my 1st year of teaching)
1	I have utilized the die cut machine
1	Some accucut designs
1	I am not sure of what materials were provided in my room by SEPA
1	NONE
1	some of the booklets & homework folded/glued together
1	None
1	Die cuts
1	used some booklets
1	We have used some things for after school project. - paper, foam, models, "peep", - the zoo trip helped me coordinate the zoo presentation.
1	I do not use materials.
1	Die cuts in teaching the life cycle of butterflies and frogs.
1	weather materials - books inflatables, cut outs, plants, life cycles.
1	foldables - di-cuts - manipulatives (ex. Body apron, food pyramid, BINGO)
1	Microscope, dye cuts, food pyramid
1	Foldables, di-cuts, manipulatives
1	dye cuts
1	None - not sure what they have provided
1	Don't have any SEPA 'stuff'. Utilize 'real' Sci. books (in Time Life, Nat. Geo….)
1	Die-cuts. Resources from other teachers who have attended SEPA classes.

1	I don't know
1	life cycle models, resource books
1	Water cycle that I made last summer.
1	1. plastic containers 2. Bird materials & books 3. plants & frogs unit.
1	None
2	microscope, small magnets,
2	science models and BOOKS, science activities and cut-outs
2	Die cuts
2	die cuts
2	Die cuts
2	frog cycle stamps, egg candler, decibal meter, life cycle posters
2	cut outs, butterfly model, life cycle magnets - magnify classes, safety glasses, cell models
2	None
2	Dina Zykes cuts
2	Organizers
2	foldable ideas/handouts, di cuts for math
2	I haven't used any.
2	microscope, experiments
2	cloud viewer, accu cuts, lesson deals, (bugs & life cycles - plastic)
2	Life cycle models, materials from the die cuts, posters, color paddles, magiscope
2	materials distributed during summer workshops and items made using accut machine
2	Science safety posters.
2	the microscopes, all the lab equipment, the handouts & binder info, safety posters, posters/charts given by presenters, the lab coat gets the attention, too:)
2	I used most of the activities we were taught.
2	Scales, beakers, graduated cylinder, microscopes, safety googles, cell models, rulers,various activities given to me, construction paper, magnets
2	All resources & kits provided by SEPA.
2	materials that pertain to what I am teaching for that month.
2	sound Materials, Posters, Body Model, Books, Microscopes, hand lens, safety goggles, bird materials, measurement & capacity sets, die-cut pieces
2	42. for first 2 - 9 weeks. Water cycle diagram and cut outs
2	Unsure
2	none supplied
3	I use the text book, internet & Odyssey Program & dictionary.
3	Cutouts
3	Posters - Safety; posters - science; health careers; die cut machine products; well chosen one/rock experiment/ many other experiments.
3	Die cuts
3	Few
3	dye cuts
3	Safety posters, Role Model Posters, Science Kit, Resource Book, Microscopes
3	Posters
3	Hands-on dye cut - visual aids.
3	microscopes I'm sure there is more but the other teacher is more involved with where materials have come from.
3	Maps, scales, goggles
3	We have a science supply room with several items in that we received because of the SEPA program. I use different items from that room all the time.

3	Die cuts that were brought to school on in-service days.
3	This is my first year here so I am not that familiar with the materials.
3	Posters- role model, safety. Supplies form summer camp

Future Professional Development Needs

Question 37 asked teachers: What do you see as the most important areas for future science professional development for your grade level? Overall, the theme from the teachers was a need for the integration of technology, standards based content-focused professional development that helps them to engage students in meaningful science explorations.

Grade group 1 teachers were most likely to mention “hands-on” explorations, activities, materials. Group 1 teachers also mentioned the need for the integration of technology, standards based professional development and a Native perspective.

Grade group 2 teachers were more specific and content based in their answers to the question. They mentioned the need for standards based content professional development. They mentioned Earth/space science, physical science, and technology as key areas. Group 2 also mentioned the need for learning new ways to engage and excite students in learning science.

Group 3 teachers described the need for learning ways to engage students in more authentic scientific explorations in the areas of earth and physical science. One teacher mentioned needing help with classroom management during labs and help applying the scientific method. Concerning the scientific method – we would recommend that the project shift from using the scientific method as a model for how science is done and move toward the scientific processes used in inquiry (NRC, 1996 and 2000; AAAS, 1993), an explanation that better reflects the way science is really done. The University of California Museum of Paleontology has amazing resources on their website: Understanding Science http://undsci.berkeley.edu/

Grade group	Future PD needs
1	Innovative ways to teach science using technology.
1	Don't know
1	more ways to incorporate hands-on activities for kids.
1	Experiments
1	Having the space & materials for science.
1	more technology
1	Community helpers unit - expand - let them know of Native Americans in these fields
1	Having projects that get students involved & hands-on.
1	More hands on exploration
1	create a larger unit on community helpers & how it is used here on their reservation & that they are Native People.
1	Excitement
1	To make students aware of science and get them more involved in hands on activities to think outside the box. Empower students.
1	weather materials – books, inflatables, cut outs, plants, life cycles.
1	using more hands-on resources

1	science that includes technology, so it prepares my students for future jobs.
1	Background knowledge of concepts
1	careers in science
1	Moving away from a single science text & a "one size fits all "science program"
1	How to make manipulative & use. Workshops (at school) on effective ways to teach standards without text.
1	more instruction on serving portion and uncertain about new/old food pyramid - not much published
1	technology tied to experiments
1	More hands on activities
1	More hands on ideas with set curriculum for grade level.
1	1. More ideas & planning time to make projects 2. Time table for what should be taught when.
1	getting science back as a priority to teach throughout the week
1	getting Hands on materials in the classroom.
2	more technology
2	activity for each unit/chapter taught
2	more information that goes along with the standards.
2	Have a basic understanding of life, earth, and physical science. This does not include evolution, embryonic and stem cell research.
2	more hands on activities
2	Having units that help me meet the state standards
2	no opinion
2	Help with lab or experiments
2	discovery learning
2	space
2	scientific Inquiry, Life Sciences, health
2	Technology
2	uncertain
2	unsure
2	I will be moving down to 4th grade for 2009/10 school year in August. I know I need some help/materials!
2	global warming - facts & fiction, technology breakthroughs in the various fields.
2	I am not sure since I haven't taught science for 3 years.
2	earth science, physical science
2	To enrich students to progress in science to become productive citizens using science.
2	send more teachers to science in other classrooms.
2	Rocks, Topography, physical sciences
2	weatherman (meteorologist)
2	finding Ways to engage 5th grade students
2	Hands on Activities
2	Our main problem is time and materials.
3	I would think more computer programs but I would hope for more hands on and tactile involvement.
3	more lab experiments
3	Why is this important to me (student perspective), food, water, soil, air, personal responsibility for health & choices.
3	experimentation
3	I would like more help on helping students apply the scientific method to their independent projects. Also, I would like more help with classroom management during labs.
3	experiments

3	materials provided to teacher.
3	medicine,
3	earth science
3	physical & health
3	In order to increase science understanding we need access to labs for experimentation.
3	FOSS training & curriculum
3	Making all teachers aware of everything that is available to make science fun.
3	lab skills
3	universe, plants, community

Use of Posters

Are you using the science safety posters?
YES: 42.7%
NO: 57.3%

Are you using the Role Model Posters?
YES: 52.0%
NO: 48.0%

Fewer than half of the teachers surveyed are using the science safety posters and just over 50% are using the role model posters. Many of the descriptions of how the posters are being used indicate that teachers are not engaging students with the posters, but simply hanging them on the wall in the hopes that they will help students. A few of the teachers mentioned referencing the posters in the context of a lesson or activity.

If yes, how are you using the posters in your classroom?

Motivational
They are posted in a prominent place - I move them occasionally to draw attention to them again! I also refer to them occasionally, especially to encourage positive attitudes about successful futures.
hung in room and students look at and I mention when we can relate our discussions to one of the posters
Posters are by the restroom
Posted in Hallway of K/1 building
Never received any posters
They're posted in K/1st building.
They are displayed prominently in our hallway.
don't have any
Displaying them and discuss. Part C. They were made aware of posters.
No. They are in our local library.
They are displayed in my classrooms
not for Kindergarten
Made them into a book. We review it before experiments. Use posters for social studies community helpers, career choices, character development, etc.
I do not have safety posters. Role model posters are up.
What Safety Posters? Role Model Posters are displayed; it wasn't really explained, though
Was not given any.
They have been up on my side of the wall & everyone sees them as they pass by. Safety posters are up in my room &

bathroom.
Positive futures await those who stay in school.
We talk about the posters over safety before we start new experiments.
referring to them
Poster are hung in room for students to read and if interested in a field, research on internet.
Talk to students about it.
Not this year no room
yes
Posted as a reminder during science
As reminders
Safety posters are used to remind students of safety rules. Role model posters are used to encourage Science fields.
Use at beginning of year.
They are all posted in my room - Safety Posters. They are posted on both levels of the Elementary School - Role Model Posters. C. they (role model posters) are available to her (counselor) - don't know if she's used them.
Since I do not teach science I have no reason to use the posters.
the safety posters are up and posted for them to see - depending on the experiment we read the ones that we use. Role Model Posters - Are up for the students to look at.
To ensure good role modeling with the students.
They are hanging in the classroom and all students questions about these pictures.
Safety posters are displayed, role model Posters displayed - used for discussing careers and also placed in Gear-up office and High School counselors - plus in common's area.
Discussing what important safety is and how Native Americans are graduating from college.
I didn't receive them.
Never received these.
yes in
Safety posters (all of them) are displayed on west wall. Role model posters are in at least 4 areas of the school.
They are displayed on bulletin boards.
Hand washing by sink.
Hanging on the wall.
These are displayed in the hall.
display & discuss
Displaying them and also reminding the students that they are able to follow in the role model's footsteps.
The safety posters are posted around the lab table @ eye level to help students remember the procedures.
Use them to learn lab techniques, establish Role Models
To remind students of what they should be doing if they forget or don't follow safety and role model behaviors.
They are displayed

Have you collaborated with your school counselors to use the role model posters in career exploration with students?

YES: 9.9%
NO: 91.1%

Fewer than 10% of the teachers have worked with a school councilor to highlight the role model posters. This is an area that could be expanded in future grants.

Question 46 asked teachers if they can attribute any changes in student interest in science or science careers to you or your schools involvement in the SEPA project? What are they?

Grade group	Attribute
1	I think a little bit, even just form the posters and how I use them. (see How Using)
1	A little more excited.
1	Only the students they like science more than other subjects.
1	No
1	N/A
1	Students are excited about science.
1	No
1	I don't get to see students in class very often.
1	Using die-cuts were enjoyable for the kids. We used them for predicting March weather. (Lion, lamb)
1	No
1	I am not able to comment on the question.
1	yes, They want more hands-on projects.
1	yes, getting new resources.
1	Teachers are more excited about science because they have the tools and resources to teach it.
1	Get students involved in career training in the science fields.
1	not any observable changes in kindergarten
1	More student participation in Science Fair. Teachers inner-acting about Science curriculum.
1	I teach 1st grade. I am not aware of students career interest. We do talk about what comes after high school - college and different career choices.
1	not any observable changes in kindergarten
1	no, I've never attended a meeting. I wanted to last summer, but I'm glad I didn't. Those that went didn't get what was promised - appropriate stipend, classroom supplies, etc.
1	Yes, we have a science club that students want to be in. We could maybe use a SC for K-2nd grade.
1	I am more passionate about teaching it because there are so many "cool" things to teach & things to learn about.
1	Yes. More talk on about moving into Science careers after HS.
2	I have had some students get more involved in experiments during the year. Hands on projects help all students and teachers.
2	yes, more excited in science.
2	At times, I haven't used much of the equipment given and haven't done many of the activities. The die cuts have been helpful at times.
2	Not at this time.
2	None
2	No
2	Teaching K-2 special education so am not certain

2	The students are more excited about the science topics and they enjoy using the materials.
2	I believe they're happier doing more hands-on activities than my students in the past did & I love the fact I don't have to get bored either by doing the same ol' thing year after year.
2	When I did 4th grade science, students had an increase interest in science.
2	The more ideas/resources we receive or gain will help us better our teaching of science. If we have the materials to use to do experiments with we can actively engage the students in science. Before we had some supplies but through SEPA we were able to get materials and can get students more involved and do more experiments.
2	To involve more of SEPA.
2	Have a science club for 3rd, 4th, & 5th graders. More entries in Science Fair - Anxious for Science Class
2	Yes, some students are wanting to be vets.
2	no involvement.
3	I haven't had the involvement with SEPA to adequately answer these questions.
3	yes, the cutouts worked for my class as "pocket" study guides.
3	Student still talk about DNA day and we discuss issues.
3	very little first hand because I have only started teaching science in the last 2 months.
3	The labs they take part in really spark interest.
3	Maybe, I don't get to see it because I'm not in that field.
3	Yes, they're very helpful in answering questions.
3	Students like science more because we have better materials.
3	Yes, they are able to get excited about the possibility of going into a medical field of some kind.
3	I am new here so I have not observed the changes yet.
3	The summer camp is a huge positive that the students cannot quit talking about. They discuss science labs when Maurice and others from SEPA present.

General Reactions to the UNMP SEPA Project

Teachers were asked to rate their agreement with a number of statements about the impacts of the SEPA project. Table 6 shows the percent of responses in each category, for each statement. Overall, teachers had a mostly positive view of the impact of the SEPA project on various areas of teacher, school, and student development over the course of the project. The highest rated items were connected to items 47 and 49; teachers enjoyment of teaching science (M = 4.79, between "somewhat agree" and "agree") and deepening of content knowledge (M = 4.58, between "somewhat agree" and "agree").

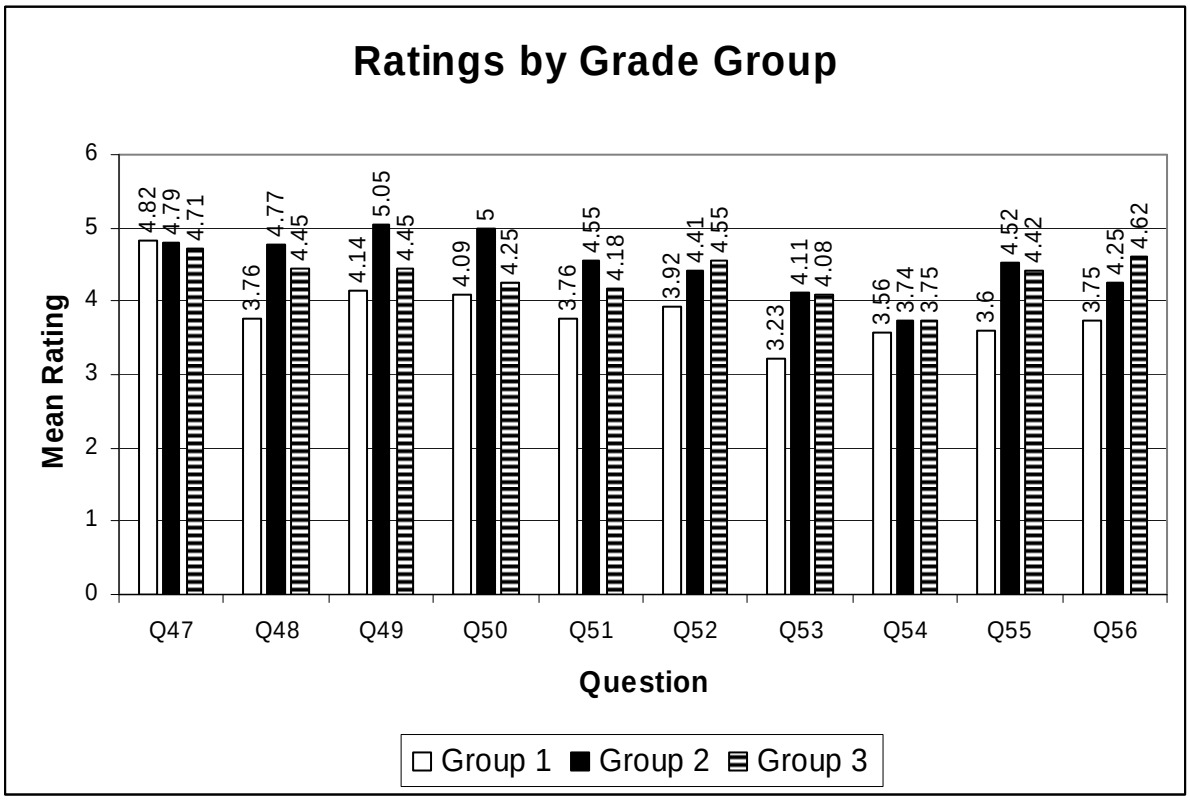
The lowest ratings were for items number 53 (M = 3.76) and 54 (M = 3.70). Item 53 dealt with collaboration across participating schools and item 54 asked teachers about knowledge of the program within the community. Both items were rated in the "somewhat disagree to somewhat agree" range. All other items fell between the "somewhat agree" and "agree" range.

Table 6.

	Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Somewhat Agree 4	Agree 5	Strongly Agree 6	Mean	Std. Dev.
47. I enjoy teaching science	1.2	5.8	2.3	20.9	43.0	26.7	4.79	1.12
48. This project has provided a coherent vision for science education that has transformed your teaching practices?		5.3	5.3	49.1	29.8	10.5	4.35	.94
49. The teacher professional development program that the SEPA project offers has helped to deepen my content knowledge in science.	1.8	1.8	1.8	45.6	29.8	19.3	4.58	.99
50. The SEPA project has deepened my understanding of research-based teaching practices (inquiry, cooperative learning, questioning strategies, etc.).		3.4	5.1	45.8	30.5	15.3	4.49	.94
51. The SEPA project has helped to expand my leadership capacity in my school.		7.3	12.7	47.3	21.8	10.9	4.16	1.03
52. The SEPA project has promoted collaboration between teachers at my school.	1.6	6.6	11.5	37.7	29.5	13.1	4.26	1.14
53. The SEPA project has promoted collaboration across SEPA participant schools.	3.6	12.7	18.2	38.2	23.6	3.6	3.76	1.17
54. The community where my school is located has knowledge about the SEPA project.	4.5	13.4	20.9	38.8	13.4	9.0	3.70	1.26
55. I have noticed an increase in student interest in science over the past few years.	3.3	6.7	10.0	35.0	36.7	8.3	4.20	1.16
56. Sharing of resources from the SEPA project is common in my school.	5.7	8.6	8.6	38.6	18.6	20.0	4.16	1.39

Teachers in Grade groups 2 and 3 were more likely to agree with 45 through 56 than teachers in group 1. Across all groups, most teachers agreed that they enjoy teaching science. The lowest rating was for the item asking if the community has knowledge of the SEPA project. Figure 7 details the breakdown.

Figure 7.



Administrator Summative Survey

Administrators returned surveys from the following schools:

Marty Indian School
Omaha Nation Public School
Winnebago Public School
St. Francis Indian School
St. Augustine Elementary
Walthill Public School
Tiospa Zina Tribal School

Administrators were asked how long they have been the administrator at the school. Of the 12 individuals who responded, 6 have been the administrator at their school for just 2 years or less.

Table 7. Number of years as administrator

	2 years or less	3-5 years	5-10 years	More than 10 years
How long have you been an administrator at this school?	6	3	2	1

Administrator Rating of Student Ability

Administrators were asked to rate the reading, math and science level of the students at their school during the needs assessment and when they responded to the summative survey. The following two figures are the graphical representations of that data. For the needs assessment data, only administrators from schools that remained involved in the project were included. This data may be a little bit different than what was reported on the needs assessment in 2006. Administrator responses represented a shift in all areas from fewer ratings in the “below grade level” category to more in the “at grade level” category.

Figure 8. Administrator ratings of student ability – Needs Assessment

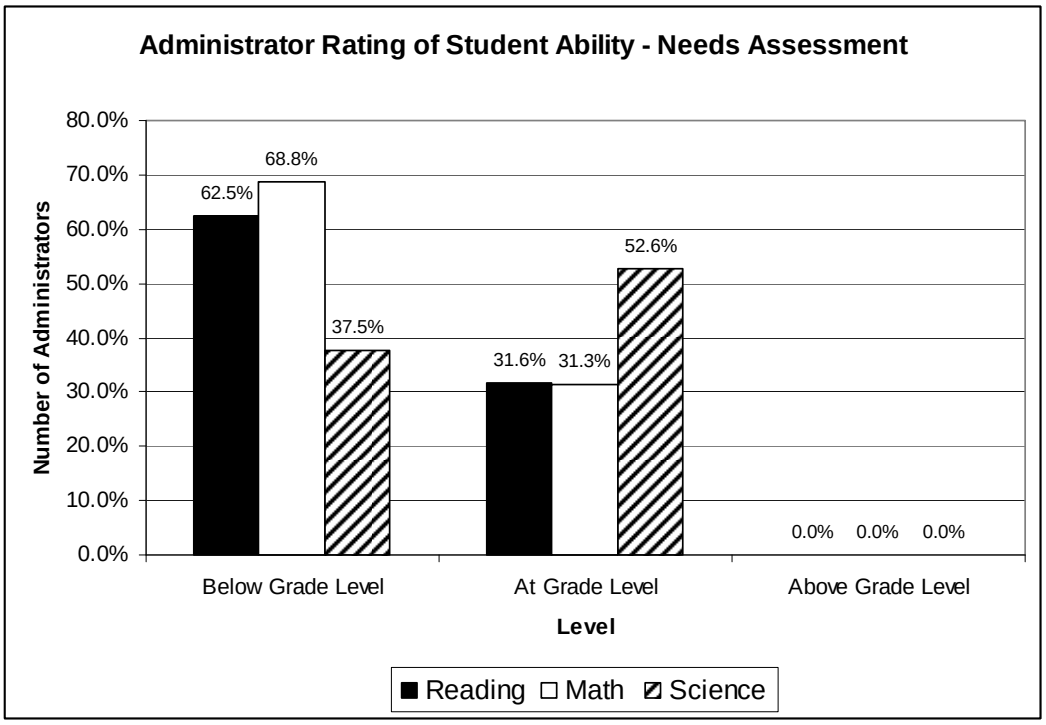
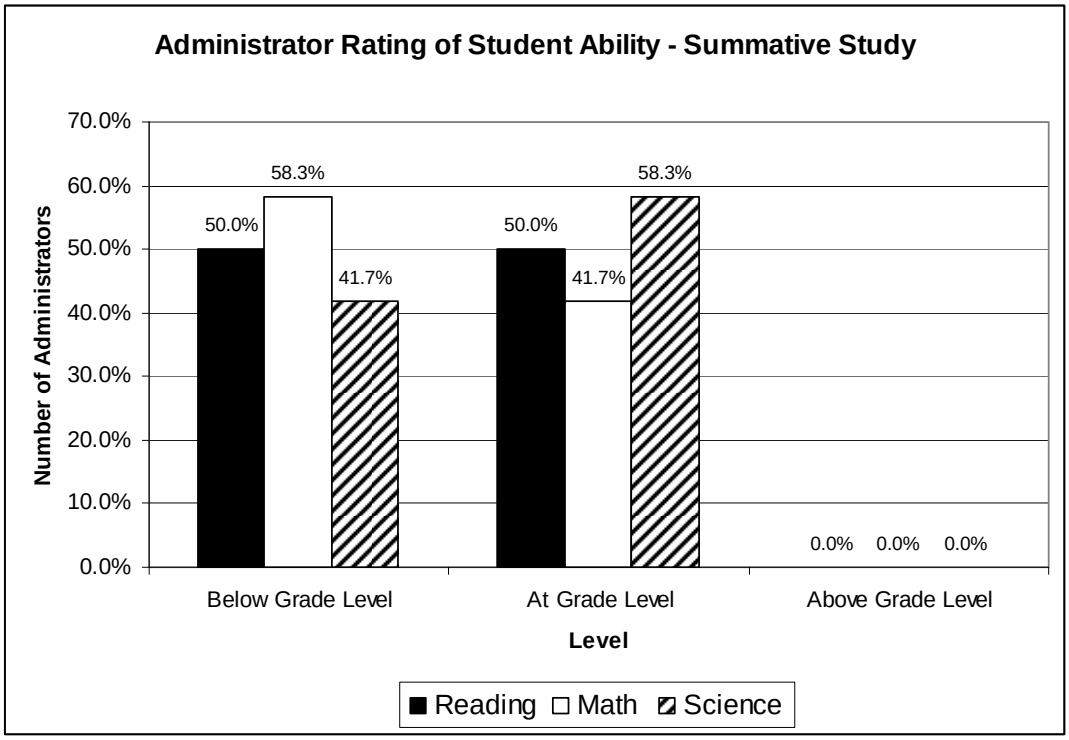


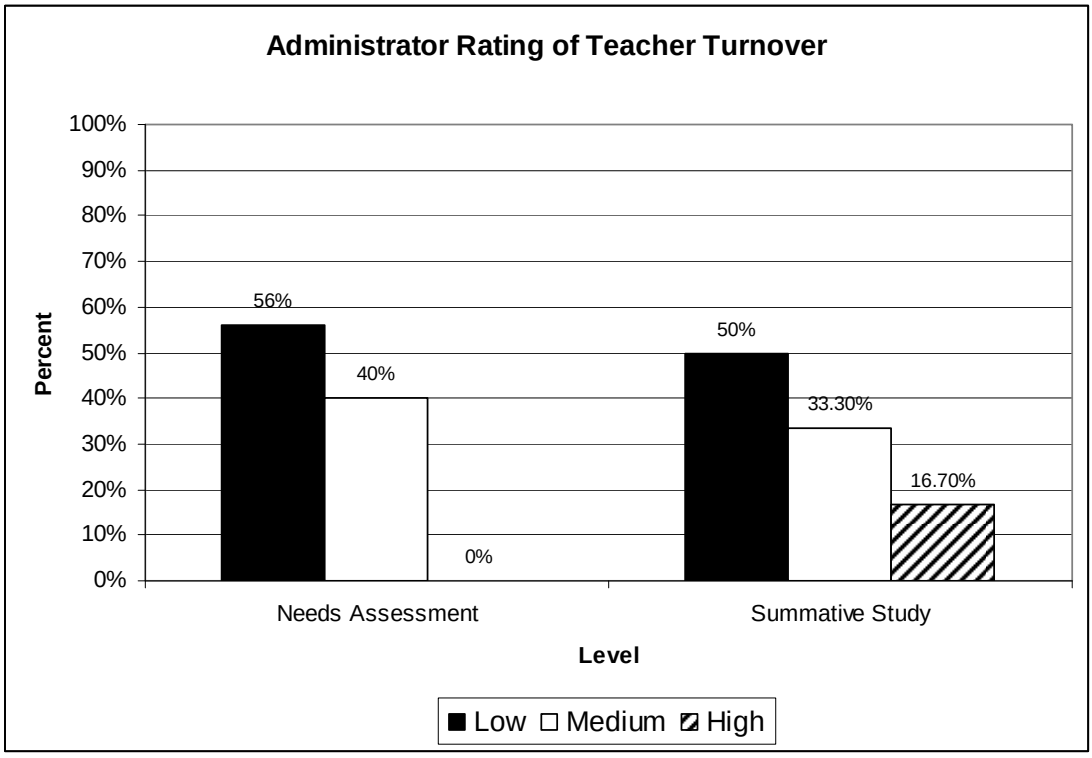
Figure 9. Administrator ratings of student ability – Needs Assessment



Teacher Turnover

Administrators were asked to characterize the level (low, medium or high) of turnover at their school (Figure 10). From the needs assessment to the summative study, there was an increase in administrators rating turnover at the high level. This variability in staffing can impact projects like SEPA in that it becomes more difficult to develop long lasting relationships with teachers.

Figure 10.



Administrators were asked - Aside from the SEPA project, what other professional development programs are currently taking place at your school? Many of the schools have professional development training in math, reading, history/social studies related to Native American culture, and various classroom/behavior management programs.

We have extensive professional development going on in reading (whole school), social studies w/a Native American Emphasis, Nebraska Math, and PBS.
many - 5 doing M. A. in Native Am. History. PBS, APL. 7 in Math project. 8 in Web technology through ESU. In-house trainings.
PBS- Positive Behavior supports, APL-Behavior management Strategies, REWARDS Training- upper teachers
APL - Instructional strategies, Literacy learning to increase reading achievement, R & I pilot school
Science Discovery Center/GEMS kits thru gifted program. Engage learning - teaching strategies. School Improvement - Effective schools
Guided reading training, suicide prevention, dealing with students in poverty.
Circle of Courage, APL, math Strategies.
Learning Teams - the Explosive Child. Learning Web - science & technology
Learning focused, BIE Reads, Boystown Training.
Learning focused strategies, Positive Behavoir Supports, BIE Reads, SAXON Math, Some Individual teachers are attending Nat'l Math & Nat'l Science Conferences
Instructional Strategies, Curriculum mapping, Dibels, Star Math & Star Reading, Accelerated Reading & Math, Classroom Management Strategies

Administrator Perceptions of UNMC SEPA Project

School administrators were asked: "Over the course of your schools involvement with the SEPA project, have you noticed any increase in student and/or teacher interest/participation in science related school-based activities? If yes, please describe."

Many of the impacts that the administrators reported were related to teachers being excited and motivated to implement new techniques. The student impact has largely been greater interest in science, along with greater participation and excitement. One administrator noted that a focus on the South Dakota state standards has helped teachers.

Absolutely and several of the Elementary students have become very interested and involved in what the high school students are doing.
hard to judge, but good involvement.
yes, some teachers came to me this year, excited with what they had learned over the summer and wanting to tell me about it.
yes, I would say that the upper levels are doing more hands-on activities.
The teachers come back from the summer workshops enthused and excited to implement some of the things they have learned.
yes, we have a more focused idea of science and its standards for South Dakota. We have incorporated on other school science club with over 40 members K-8.
The teachers have become very active in organizing a science supply lab and having students participate in hands on activities.
Having materials and activities from summer workshops increases teachers ability.
No
yes, when SEPA did the DNA presentation, I heard several students comment about how interested they were in DNA studies/jobs in the future.
1. Middle School - Robotics 2. More use of graphic organizers & mnemonic devices 3. more appropriate & age-level exploratory labs.
Science Fair has increased participation.

Today, what do you see as the greatest need of your teachers in the areas of health/science professional development?

Administrators indicated that resources and content-based professional development were at the top of the list as far as future needs for teachers. Two mentioned the need for curriculum materials (one mentioned "standards-based curriculum). Health practices, science and health careers, and geographically relevant programs were also mentioned.

Programs of relevance to this area of Nebraska - a Missouri River study, and more & more health/medical areas.
health practices for students/staff - unhealthy lifestyles.
More teachers need to become involved, lesson plan ideas, information on materials available.
The highest need is trying to teach without enough supplies for the whole class. Supplies are limited. They need to know things to teach the concept without a science lab.
The greatest need is probably developing competency in the science/health concepts they teach. Basically building their knowledge base.
Keeping a standards based curriculum that is scope and sequenced for adequate coverage of science.
Awareness of Science/health professions. Content specific training.
More ideas
need: Integration of technology into daily lessons
Having "hands-on" materials and lessons to get students more excited about science. I think summer science camps help to inspire students plus "job shadowing" (science type) help too.

adequate planning & materials
Resources to increase teaching skills such as science lab, new books etc.

In what ways could the SEPA project encourage greater teacher involvement at your school?

Administrators would like the project to focus on more on-the-ground professional development within individual schools. They mentioned working individually with teachers within their classrooms, engaging the entire teaching staff at a school in professional development opportunities, and offering college credit.

By bringing in speakers or short sessions on our professional development days where all staff are involved in learning about something they could share through their own discipline.
many (some) staff to not feel they teach science - need for integration.
Professional development
To encourage greater teacher involvement the SEPA project should continue to provide workshops. Another way is to work with individual classrooms when students are in session.
Not sure because the teachers are very involved in so many different areas now - in addition we have at least 10 of the 50 currently pursuing their master's degrees. Teachers are very busy - time is limited.
We are always in need of science materials for the classroom as we have 19 classrooms to fill. Microscopes, visiting scientists, websites, classroom modeling by Technical Assistance providers to bring out more curiosity and awareness to our students.
Offer school wide workshops for all teachers to attend that relate to science and health.
Not sure I have involvement.
Include 7-12 teachers
Having workshops etc. that they could receive college credit for would be good.
more on-site staff development, especially with integrating technology into the classroom.
By providing more professional development that can be brought into the school instead of leaving to attend PD. More cultural-based science activities & explorations

Most of the administrators are aware of the lab safety and role model posters. Many describe the posters being used as displays around the school and in individual classrooms. Some mention use of the posters as a teaching tool but the descriptions do not get specific about how they are used. Administrators note that they have observed students engaging with the posters. Many of the teachers that were interviewed at the beginning of the year were using the role model posters to tell students about careers, but were not engaging them in further explorations. This is an area that the project could focus attention in the future as a prime curriculum development area.

Table 8. Poster Awareness

	Yes	No
Are you aware of the lab safety posters created by the SEPA project?	10	2
Are you aware of the role model community posters created by the SEPA project?	11	1

Please describe how the posters are being used at your school.

They use display for the students - all of the students.
Posted several locations - some discussion.
Each teacher has a set for classroom use.
Teachers have the posters hanging in their classrooms. They also refer to the posters during some lessons.
Teachers display the posters and use them as teaching tools.
We have them up in our schools, so students are exposed to the different professions.
The role model posters are hanging in the entryway of the school and in the counselor's office.
In classrooms and halls.
They are not at the junior or senior high

Safety posters are in our classrooms (labs) and the role model ones are in hallways and classrooms.
1. Displayed in classrooms & hallways 2. health classes integrate posters (role models)
The posters are hanging around the school and in the classrooms.

Have you observed teacher and student interest in the posters?

yes, students always notice posters in the hallways, etc. It is a good vehicle for information.
yes.
yes, students frequently look at the signs posted in the hallway.
I have witnessed a teacher refer to it while she was teaching.
There is interest generated mostly when the posters are first displayed. The elementary counselor has posters (career) by her office and I have noted students stopping to look at and read the information.
Students always like to read what is in the walls so it is having the desired effect.
yes
yes
No
yes.
yes
yes, Students and teachers stop by to read them and draw attention to them.

Eleven of the 12 administrators felt that the SEPA project had met their expectations. It seems that the one administrator who said “no” was not aware of the project, perhaps due to a miscommunication with the principal of the elementary level school in that community (see the comment below). Many of the administrators didn’t have clear expectations of the project, but seem to be pleased with the level of engagement that the project has had with teachers and students.

What were your expectations of the UNMC SEPA project?

Because it was from UNMC I expected good things but I had no idea how closely they would follow it and be a part of it. It made a great difference.
no particular expectations - just general help.
This is my 1st year with SEPA, so I don’t know a lot about the program but would like to see more teachers involved.
My expectations were to inform staff about latest trends in teaching science.
My expectations were that both the teachers and students would gain competence in the areas of science/health and increase their willingness to learn even more.
See "Encourage" (question 11)
I did not have any expectations for the project. I do value the opportunities and information the project has provided.
Science assistance for teachers.
I will speak to Mrs. Ostrand
I expected scientists etc. to come to our school and present something fun and interesting to the students - they did! The summer events for teachers and students have been well received and appreciated in the past.
acquire knowledge, skills, materials, ideas on how to teach science, with an emphasis on Native American students & culture.
My expectations were that students would attend the UNMC, receive educational materials & have fun. They did just that and learned many things.

Table 9. Project Expectations

	Yes	No
Do you feel that the project has met your expectations?	11	1

If no to number 17, what could have been done?

I would like to see my 7-12 instructional staff involved.

Final Administrator comments

We greatly appreciate being able to have this opportunity.
Thanks for everything.
Thanks
My 7-12 staff has had a high turnover rate leading to little consistency.
I hope the SEPA projects will continue they have been meaningful and helpful.

Citations

Biological Sciences Curriculum Study (2006). *University of Nebraska Medical Center SEPA Breaking Barriers Results of Introductory Survey of Teachers and Administrators (ER 2006-05).* Colorado Springs, CO: Stuhlsatz, M.A.M.

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Appedndix A: Teacher Summative Survey

2009 UNMC Science Education Partnership Award Teacher Survey

Thank you for taking the time to fill out this survey. **The SEPA project will benefit from your feedback and opinions.** When you have completed the questionnaire, please put it in the envelope, seal the envelope, sign the seal and return it to the person in charge of collecting and shipping the surveys. Please note that **your name will not be connected with this survey** when the results are reported. You will be provided with a $10.00 gift card for completing the survey Thanks for your help!

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Please provide us with the following individual information

1. What is the name of your school?				
2. What is your name?				
3. How long have you been teaching?	2 years or less	3-5 years	6-10 years	More than 10 years
4. How long have you been teaching at this school?	2 years or less	3-5 years	6-10 years	More than 10 years
5. What grade(s) do you currently teach? Circle all that apply: K 1 2 3 4 5 6 7 8 9 Other:				
6. What subjects do you currently teach? (list all)				

Circle the best response for each item

7. The majority of my students are reading…	**below grade level**	**at grade level**	**above grade level**
8. The majority of my students are doing math…	**below grade level**	**at grade level**	**above grade level**
9. The majority of my students are doing science	**below grade level**	**at grade level**	**above grade level**

11. Please put a check mark next to the SEPA project activities that you have taken part in over the last 3 years (check all that apply).

___2006 Summer Teacher Workshop
___2007 Summer Teacher Workshop
___2008 Summer Teacher Workshop
___In-service day at my school
___One-on-one visit with SEPA staff in my classroom
___Attended a Student Science Camp
___Participated on Advisory Board
___Other (please describe)
_____
___I have not participated in any SEPA project activities.

Please rate your agreement with the following items:

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
12. When a student does better than usual in science, it is often because the teacher exerted a little extra effort	1	2	3	4	5
13. I am continually finding better ways to teach science.	1	2	3	4	5
14. Even when I try very hard, I don't teach science as well as I do most subjects.	1	2	3	4	5
15. When the science grades of students improve, it is most often due to their teacher having found a more effective teaching approach.	1	2	3	4	5
16. I know the steps necessary to teach science concepts effectively.	1	2	3	4	5
17. I am not every effective in monitoring science experiments.	1	2	3	4	5
18. If students are underachieving in science, it is most likely due to ineffective science teaching.	1	2	3	4	5
19. I generally teach science ineffectively.	1	2	3	4	5
20. The inadequacy of a student's science background can be overcome by good teaching.	1	2	3	4	5
21. The low science achievement of some students cannot generally be blamed on their teachers	1	2	3	4	5
22. When a low achieving child progresses in science, it is usually due to extra attention given by the teacher.	1	2	3	4	5
23. I understand science concepts well enough to be effective in teaching elementary science.	1	2	3	4	5
24. Increased effort in science teaching produces little change in some students' science achievement.	1	2	3	4	5
25. The teacher is generally responsible for the achievement of students in science.	1	2	3	4	5
26. Students' achievement in science is directly related to their teacher's effectiveness in science teaching.	1	2	3	4	5
27. If parents comment that their child is showing more interest in science at school, it is probably due to the performance of the child's teacher.	1	2	3	4	5
28. I find it difficult to explain to students why science experiments work.	1	2	3	4	5
29. I am typically able to answer students' science questions.	1	2	3	4	5
30. I wonder if I have the necessary skills to teach science.	1	2	3	4	5
31. Effectiveness in science teaching has little influence on the achievement of students with low motivation.	1	2	3	4	5
32. Given a choice, I would not invite the principal to evaluate my science teaching.	1	2	3	4	5
33. When a student has difficulty understanding a science concept, I am usually at a loss as to how to help the student understand it better.	1	2	3	4	5
34. When Teaching science, I usually welcome student questions.	1	2	3	4	5
35. I don't know what to do to turn students on to science.	1	2	3	4	5
36. Even teachers with good science teaching abilities cannot help some kids learn science.	1	2	3	4	5

Please respond to the following items:

37. What were your expectations of the SEPA project?
38. Do you feel that the project activities have met your expectations? **a.** YES___ NO___ **b.** Please explain your answer to 38a:
39. What are the areas of science instruction that you struggle with?
40. What areas of science do your students struggle with?
41. Are you currently using a science series to teach science? If yes, what is it called?

42. How much of your time, per week, is spent teaching science or health career exploration?	**Hours:** **Minutes:**

43. What materials or resources have you used or do you plan to use in your classroom that were provided by the SEPA project either directly or indirectly?

44. What do you see as the most important areas for future science professional development for your grade level?

45. Are you using the science safety posters and/or the role model health/science career posters that are produced by the UNMC SEPA project?

a. Safety Posters: YES____ NO_____ Role Model Posters: YES____ NO____

b. If yes, how are you using the posters in your classroom?

c. Have you collaborated with your school counselor to use the role model posters in career exploration with students? YES____ NO____

46. Can you attribute any changes in student interest in science or science careers to your or your schools involvement in the SEPA project? What are they?

Please rate your agreement with the following items:

	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree	Not Applicable
47. I enjoy teaching science	1	2	3	4	5	6	0
48. This project has provided a coherent vision for science education that has transformed your teaching practices?	1	2	3	4	5	6	0
49. The teacher professional development program that the SEPA project offers has helped to deepen my content knowledge in science.	1	2	3	4	5	6	0
50. The SEPA project has deepened my understanding of research-based teaching practices (inquiry, cooperative learning, questioning strategies, etc.).	1	2	3	4	5	6	0
51. The SEPA project has helped to expand my leadership capacity in my school.	1	2	3	4	5	6	0
52. The SEPA project has promoted collaboration between teachers at my school.	1	2	3	4	5	6	0
53. The SEPA project has promoted collaboration across SEPA participant schools.	1	2	3	4	5	6	0
54. The community where my school is located has knowledge about the SEPA project.	1	2	3	4	5	6	0
55. I have noticed an increase in student interest in science over the past few years.	1	2	3	4	5	6	0
56. Sharing of resources from the SEPA project is common in my school.	1	2	3	4	5	6	0

Thank you for taking the time to fill out the questionnaire!
Please place your finished questionnaire in the envelope provided, seal it, sign the seal, and hand it to the person in charge of distributing and collecting the questionnaire for your school.

Appendix B: Administrator Summative Survey

Introductory Survey of Administrators
SEPA Breaking Barriers

Thank you for taking the time to fill out this survey. **The SEPA project will benefit from your feedback and opinions.** When you have completed the questionnaire, please put it in the envelope, seal the envelope, sign the seal and return it to the person in charge of collecting and shipping the questionnaires. Please note that **your name will not be connected with this survey** when the results are reported.

Thanks for your help!

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7. What is the name of your school?				
8. What is your name?				
9. How long have you been an administrator at this school?	2 years or less	3-5 years	5-10 years	More than 10 years

Please circle the appropriate level:

4. The majority of the students at my school are reading…	**below grade level**	**at grade level**	**above grade level**
5. The majority of the students at my school are doing math…	**below grade level**	**at grade level**	**above grade level**
6. The majority of the students at my school are doing science…	**below grade level**	**at grade level**	**above grade level**
7. Would you characterize teacher turnover at your school as…	**Low**	**Medium**	**High**

8. Aside from the SEPA project, what other professional development programs are currently taking place at your school?

9. Over the course of your schools involvement with the SEPA project, have you noticed any increase in student and/or teacher interest/participation in science related school-based activities? If yes, please describe.
10. Today, what do you see as the greatest need of your teachers in the areas of health/science professional development?
11. In what ways could the SEPA project encourage greater teacher involvement at your school?

12. Are you aware of the lab safety posters created by the SEPA project?	**Yes**	**No**
13. Are you aware of the role model community posters created by the SEPA project?	**Yes**	**No**
14. Please describe how the posters are being used at your school.		
15. Have you observed teacher and student interest in the posters?		

16. What were your expectations of the UNMC SEPA project?		
17. Do you feel that the project has met your expectations?	**Yes**	**No**
18. If no to number 17, what could have been done?		
19. Please use this space for additional comments or recommendations.		

Thank you for taking the time to fill out the questionnaire!

Please place your finished questionnaire in the envelope provided, seal it, sign the seal, and hand it to the person in charge of distributing and collecting the questionnaire for your school.